

REMARKS

Initially, the Examiner has objected to Claim 10 as being in improper form. Furthermore, the Examiner has rejected Claims 9 and 10 under 35 U.S.C. §112, second paragraph, based on the contention that they were indefinite as written. Applicant notes that the original claims were translated from a foreign application, and included a number of informalities. Therefore, Applicant has amended the claims to place them in more appropriate U.S. format, and to correct for all remaining informalities.

Additionally, Applicant has added new Claims 21-34, to claim a preferred embodiment of the present invention. Specifically, Claims 21-34 are directed to an X-ray storage element that includes, *inter alia*, a binding agent and storage particles that are both crystal clear.

The Examiner has rejected Claims 1-20, under 35 U.S.C. §103(a), based on the contention that one or more of them are unpatentable over one or more of U.S. Patent No. 5,693,254, issued to Sieber et al (Sieber '254), in view of U.S. Patent No. 5,391,884, issued to Sieber et al (Sieber '884) and U.S. Patent No. 4,733,090, issued to DeBoer et al (DeBoer '090); Sieber '254, in view of Sieber '884 and DeBoer '090, in further view of U.S. Patent No. 4,944,026, issued to Arakawa (Arakawa '026); and Sieber '254, in view of Sieber '884 and DeBoer '090, in further view of Arakawa '026 and U.S. Patent No. 4,835,396, issued to Kitada et al (Kitada '396). Applicant continues to traverse the Examiner's rejections. As will be explained below, the motivation for the presently claimed combination of elements and steps is not shown in the prior art, and therefore the Examiner has improperly combined two prior art references in an obviousness rejection. As claimed, the present invention is in fact not taught, disclosed, or suggested by any prior art reference, either alone or in combination with others.

Claim 1 of the present invention discloses a flat storage element for an X-ray image, which includes, *inter alia*, a binding agent and storage particles, wherein the binding agent and the storage particles have substantially the same refractive index. Furthermore, the binding agent is crystal clear, and the storage particles are transparent.

The Examiner has explicitly acknowledged that no prior art reference discloses matching the refractive index of the binding agent and storage particles, and having both elements transparent. Instead, the Examiner relies upon the contention that “the use of crystal clear transparent binders and phosphors is an obvious, if not inherent, design choice within the skill of a person of ordinary skill in the art” (OA, Page 4). The Examiner does not, however, provide any reasoning or motivation for the exact combination described.

Importantly, there must be some suggestion, motivation or teaching for combining prior art references. *See* MPEP 2143.01. Furthermore, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Without some suggestion, motivation or teaching to one of ordinary skill in the art, the combination of two references is merely the use of impermissible hindsight by the Examiner.

Here, the Examiner argues that the use of any particular binding agent with any particular storage particles would be an obvious design choice. Although the cited references disclose the use of the particular structures shown in the present invention (though not in the combination actually claimed), there is no discussion at all regarding the crystal clear qualities of the phosphor particles, or the crystal clear quality of the binding agent matrix. Therefore, by extension, there is absolutely no discussion of the advantages or benefits to be gained from the combination of both in a single storage element.

The present invention, on the other hand, expressly recognizes the benefits of such a structure. In thin storage layers, on the order of one or two particle diameters, luminescent light emitted from the particles will simply exit the storage layer directly. In thicker storage layers, such as those disclosed in the present invention, the path of emitted light is different depending on the placement of the particles. The phosphor particles arranged far below the free surface of the storage layer emit light that may be scattered by other phosphor particles that are closer to the surface of the storage layer. Such a scattering effect can also be seen when the refractive indices of the phosphor particles and the binding agent are matched, but the phosphor particles and binding agent are not crystal clear. The scattering effect can affect the resolution of the storage element image.

The present invention recognizes this problem, and solves it by requiring the binding agent and the storage particles to have matched refractive indices, and to have the binding agent be crystal clear and the storage particles transparent. (See Page 1, Lines 24-27, Page 2, Lines 2-5). Thus, the scattering issue, among others, is resolved using the present invention. This result is not suggested, discussed, or even approached by any other prior art reference. In fact, given the numerable possible selections for types of storage elements and binding agents, the Examiner's contention that the claimed combination would be an obvious design choice, with no motivation or suggestion for that design choice in the prior art, is akin to granting prior-art status to a random choice combination.

Instead, Applicant submits that the present combination is not taught, disclosed or suggested by the prior art, because the resultant scatter-free storage element is not contemplated by the prior art. Therefore, Applicant submits that Claim 1, as written, is now in allowable condition.

The same can be said for Claim 15, which discloses a method similar to Claim 1. Additionally, the Examiner has rejected Claim 15 based in part on the contention that the mathematical property of an “average” refractive index renders that claim obvious, which is an erroneous conclusion. An average is defined as a set of numbers, and as such has absolutely nothing to do with an external quality. In Claim 15, the average of the refractive indices of the two salts has nothing at all to do with the refractive index of the binding agent. Thus, the present invention discloses a new method, which does not include the inherent mathematical features suggested by the Examiner.

Claim 21 goes even farther than Claim 1 and Claim 15, specifically stating that both the storage particles and the binding agent are crystal clear.


Given the above, Applicant submits that all of independent Claims 1, 15 and 21 are now in condition for allowance. Furthermore, since the remaining claims, namely Claims 2-14, 16-20 and 22-34, all depend from these claims, Applicant submits that all of the pending claims should now be in condition for allowance. Therefore reconsideration and passage to allowance of all of Claims 1-34 is respectfully requested.

Should anything further be required, a telephone call to the undersigned, at (312) 226-1818, is respectfully invited.

Respectfully submitted,

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Dated: November 24, 2003



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on November 24, 2003.

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